

## Chemistry Worksheet: Matter #1

1. A mixture **(is/is not)** a chemical combining of substances.
2. In a compound the **(atoms/molecules)** are **(chemically/physically)** combined so that the elements that make up the compound **(retain/lose)** their identities and **(do/do not)** take on a new set of properties.
3. The smallest identifiable unit of a compound is a(n) \_\_\_\_\_, which is made up of \_\_\_\_\_ which are chemically bonded.
4. True or False: A mixture is always made up of a combination of elements.
5. In a mixture, the substances **(lose/retain)** their identities.
6. In a mixture the substances involved **(can/cannot)** be separated by a simple physical process.  
In a compound the elements involved **(can/cannot)** be separated by a simple physical process because the elements are **(physically combined/chemically bonded)**.
7. True or False: An element can be broken down into a simpler substance.
8. The smallest identifiable unit of an element is a(n) \_\_\_\_\_.
9. From the following list of substances, circle the ones that are elements:

silver	carbon dioxide	wood alcohol	chromium
water	hydrogen	carbon	nitrogen
oxygen	gold	sugar	salt
air	sulfur	magnesium	nickel
10. Explain how to separate the sugar and water in a solution of sugar and water.
11. How would you separate a mixture of alcohol and water?
12. How would you separate sand and water?

13. Classify the following as pure substances or as mixtures:

air	gasoline	grain alcohol
water	sugar	gold
mercury	oxygen	salt water

14. Classify the following as heterogeneous or as homogeneous:

sand & salt mixture	hydrogen	iron
salt water	unfiltered air	iron with rust
pure water	an apple	nitric acid
tossed salad	granite	wood

15. Classify the following as an element, a compound, a solution, or a heterogeneous mixture:

aluminum	raisin bread
carbon dioxide	water
sugar and water	sulfur
sulfuric acid	mercury
an orange	water & instant coffee
a pencil	carbon particles & sugar
nitrogen	air
gasoline	grain alcohol

## Elements, Compounds, and Mixtures

Classify each of the pictures below by placing the correct label in the blanks below:

A= Element

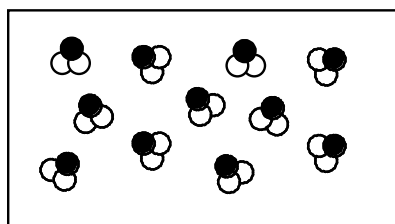
D= Mixture of compounds

B= Compound

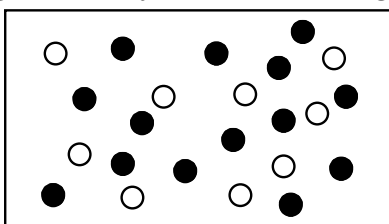
E= Mixture of elements and compounds

C= Mixture of elements

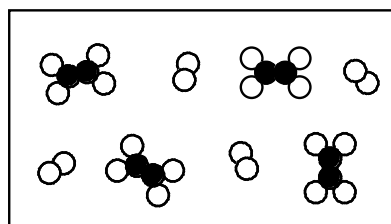
Each circle represents an atom and each different color represents a different kind of atom. If two atoms are touching then they are bonded together.



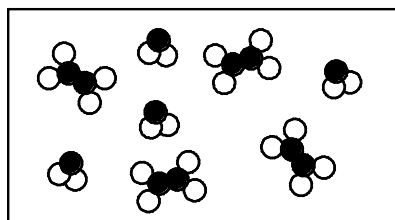
1) \_\_\_\_\_



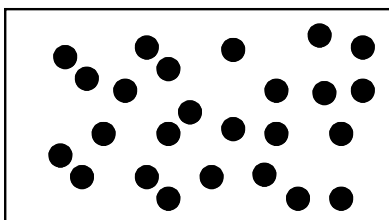
2) \_\_\_\_\_



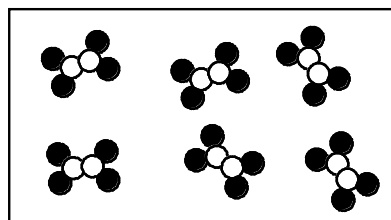
3) \_\_\_\_\_



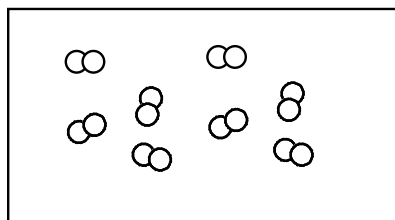
4) \_\_\_\_\_



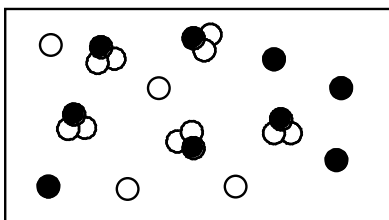
5) \_\_\_\_\_



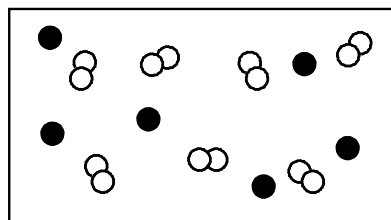
6) \_\_\_\_\_



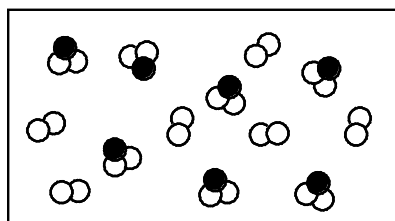
7) \_\_\_\_\_



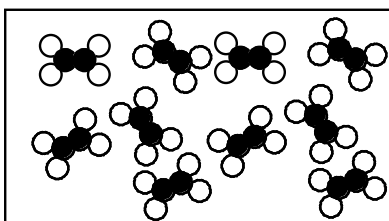
8) \_\_\_\_\_



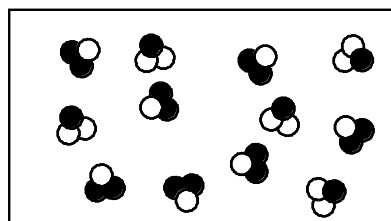
9) \_\_\_\_\_



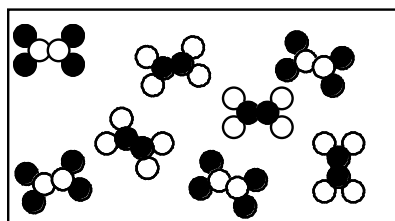
10) \_\_\_\_\_



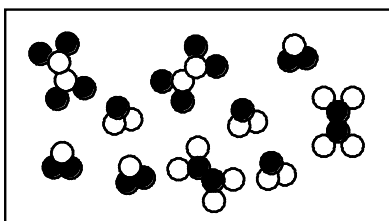
11) \_\_\_\_\_



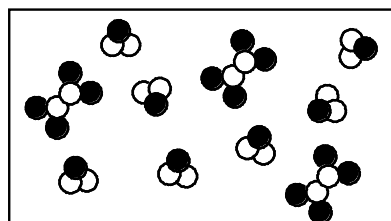
12) \_\_\_\_\_



13) \_\_\_\_\_



14) \_\_\_\_\_



15) \_\_\_\_\_

## Physical and Chemical Changes

Name: \_\_\_\_\_

Date: \_\_\_\_\_ Hour: \_\_\_\_

Place a check in the appropriate column:

Change	Physical Change	Chemical Change
Salt dissolves in water.		
Hydrochloric acid reacts with magnesium to produce hydrogen gas.		
A piece of copper is cut in half.		
A sugar cube is ground up.		
Water is heated and changed to steam.		
Iron rusts.		
Ethyl alcohol evaporates.		
Ice melts.		
Milk sours (goes bad).		
Sugar dissolves in water.		
Sodium and potassium react violently with water.		
Pancakes cook on a griddle.		
Grass grows on a lawn.		
A tire is inflated with air.		
Food is digested in the stomach.		
Water is absorbed by a paper towel.		
Ethyl alcohol boils at 79°C.		
Paper burns.		
Water freezes at 0°C.		
Fireworks explode.		
Alka-Seltzer gives off carbon dioxide when added to water.		
Clouds form in the sky.		

NAME \_\_\_\_\_

**INSTRUCTIONS:** Write **E** in the blank if the material is *heterogeneous* or **O** if it is *homogeneous*.

- |                                |       |                               |       |
|--------------------------------|-------|-------------------------------|-------|
| 1. Wood                        | _____ | 6. Dirt                       | _____ |
| 2. Freshly-brewed black coffee | _____ | 7. Sausage-and-mushroom pizza | _____ |
| 3. Water                       | _____ | 8. Air                        | _____ |
| 4. Lucky Charms <sup>®</sup>   | _____ | 9. Milk                       | _____ |
| 5. Salt                        | _____ | 10. Gold                      | _____ |

**INSTRUCTIONS:** Classify each of the following as an *element* [**E**], a *compound* [**C**], or a *mixture* [**M**].

- |                        |       |                            |       |
|------------------------|-------|----------------------------|-------|
| 11. Gold               | _____ | 16. Air                    | _____ |
| 12. Water              | _____ | 17. Carbon dioxide         | _____ |
| 13. Seawater           | _____ | 18. Silver                 | _____ |
| 14. Sugar              | _____ | 19. Ice                    | _____ |
| 15. A chocolate sundae | _____ | 20. A Big Mac <sup>®</sup> | _____ |

**INSTRUCTIONS:** Classify each of the following properties of matter as *physical* [**P**] or *chemical* [**C**].

- |                              |       |                                    |       |
|------------------------------|-------|------------------------------------|-------|
| 21. Color                    | _____ | 26. Reacts violently with chlorine | _____ |
| 22. Density                  | _____ | 27. Good conductor of heat         | _____ |
| 23. Burns easily (flammable) | _____ | 28. Dissolves readily in water     | _____ |
| 24. Not affected by acids    | _____ | 29. Melts at 145 °C                | _____ |
| 25. Boils at 450 °C          | _____ | 30. Malleable                      | _____ |

**INSTRUCTIONS:** Classify each of the following changes in matter as *physical* [**P**] or *chemical* [**C**].

- |                                 |       |                                |       |
|---------------------------------|-------|--------------------------------|-------|
| 31. Grinding chalk into powder  | _____ | 36. Burning gasoline           | _____ |
| 32. Dissolving salt in water    | _____ | 37. Hammering gold into foil   | _____ |
| 33. Dissolving zinc in acid     | _____ | 38. Melting ice                | _____ |
| 34. Tearing a piece of paper    | _____ | 39. Digesting food             | _____ |
| 35. Stretching copper into wire | _____ | 40. Making hydrogen from water | _____ |

**INSTRUCTIONS:** Classify each of the following as an *intensive property* [**I**] or an *extensive property* [**E**].

- |                   |       |            |       |
|-------------------|-------|------------|-------|
| 41. Mass          | _____ | 46. Color  | _____ |
| 42. Density       | _____ | 47. Volume | _____ |
| 43. Melting point | _____ | 48. Length | _____ |

## Getting To Know the Periodic Table

1. Number the groups.
2. Number the periods
3. Draw a heavy black line between the metals and nonmetals.
4. Write the name of each of the following groups above the number:  
Group 1 alkali metals  
Group 2 alkaline earth metal  
Group 3-12 (collectively) transition metals  
Group 16 chalcogens  
Group 17 halogens  
Group 18 Noble gases
5. Write the names of the two rows at the bottom of the chart: lanthanides and actinides
6. Write the symbol of each element that exists as a gas at ordinary conditions in RED.
7. Write the symbol of each element that is a solid at ordinary conditions in BLACK.

8. Write the symbol of each element that is a liquid at ordinary condition in BLUE.
9. Write the symbol of each element that is a man-made element as an outline. Example: **Pm**
10. Place the atomic number for each element above the symbol.
11. Use the following chart to color the periodic table.

Halogen	blue
Noble gases	yellow
Alkali metals	purple
Alkaline earth metals	red
Transition elements	green
Chalcogens	brown
Lanthanides	orange
Actinides	light blue
12. Outline the symbol's box in dark green if it is RADIOACTIVE in its most common form.